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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,716	11/30/2001	Paul Edward Arch	9220USA-NONP	4655

7590 03/06/2006  
Suzanne Kikel  
NOVA Chemicals Inc.  
400 Frankford Road  
Monaca, PA 15061

EXAMINER

ZEMEL, IRINA SOPHIA

ART UNIT PAPER NUMBER

1711

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.		Applicant(s)	
	10/021,716		ARCH ET AL.	
	Examiner		Art Unit	
	Irina S. Zemel		1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-50 is/are pending in the application.
- 4a) Of the above claim(s) 27-48 and 50 is/are withdrawn from consideration.
- 5) ☒ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-26 and 48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 claims a system, however it does not claim any components of the system other than the product of claim 1, and further claims a "using" step, which is not appropriate for a "system" or a non-method claim. Clarification is requested.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3-26 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/15703 to NOVA Chemicals of record.

The disclosure of the NOVA Chemicals (NOVA) reference is discussed in detail in the previous office action. Among other embodiments the reference discloses comparative experiment on page 20. In this experiment the reference discloses foamed pre-expanded particles that have a bulk density of 550 kg/m<sup>3</sup> after being pre-expanded from the original expandable (but not pre-expanded particles). The reference further discloses possibility of adding co-monomer, nucleating agent, coating the particles, etc.,. Those particles, which have 5.9 wt % of pentane (after being pre-expanded from the

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particles originally having 6.2 wt. % pentane) are further expanded in conventional equipment to form an article or a expanded particle with the bulk density of 14.9 kg/m<sup>3</sup>. The difference between the claimed foamed pre-expanded particles and the particles disclosed by NOVA is that the amount of the organic blowing agent, i.e. pentane, in the disclosed pre-expanded particles is slightly higher than the upper claimed limitation, i.e., 5.9 wt % as compared to the upper claimed limit of 5 wt. %. However, reducing the amount of the blowing agent in the pre-expanded particles (by impregnating the original non-expanded particles with smaller amounts of pentane) would have been clearly obvious from the teachings of the reference expressly disclosing (all illustrative and comparative experiments) that the amount of the blowing agent in the original expandable particle governs the ability of the pre-expanded particle to be expanded to different ratios and resulting in final product of different densities. The criticality of the claimed upper limit of the amount of pentane, such as 5 or 3.5. wt %. Is not established in either the specification or in the declaration and no showing of unexpected results in the pre-expanded or finally expanded particles that can be attributed to the claimed upper amounts of the blowing agent are presented on the record. Moreover, the criticality of having amounts of blowing agents no greater than the claimed 5 wt. % has not been recognized by the applicants as evident from earlier claimed 6 % as the upper limit.

The reference does not address the properties of the pre-expanded particle (such as blow agent weight loss) or the cell structure of the particles, however, in view of the fact that the disclosed particles are obtained by substantially the same procedure

(suspension polymerization followed by pre-expansion) as the procedures disclosed in the instant application, it is reasonable to believe that the claimed properties are inherently present in the disclosed pre-foamed particles. The burden is shifted to the applicants to provide factual evidence to the contrary.

The reference discloses various methods of obtaining the particles, including various types of polymerization. Moreover, it should be noted that the claims are directed to the product and not the process, even though some the claims are presented in "product-by-process" format. However, the patentability of those claims depends on the product features, regardless of the process those particles were obtained. It is believed that the disclosed particles correspond to the claimed particles in all of the claimed parameters as obtained from the same components in either identical or substantially equivalent processes.

The burden is shifted to the applicants to provide factual evidence to the contrary.

### ***Response to Arguments***

Applicant's arguments filed 12-19-2006 have been fully considered but they are not persuasive. With respect to applicants statement regarding common ownership and common co-inventors, these statements are irrelevant for the anticipation rejections under 35 USC 102, or obviousness rejections based on any paragraph of 102 rejection other than 102(e). In the instant case, the obviousness rejection was based on 35 USC

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102(a). The common ownership statement can only be used to remove a 103 rejection that is based on 102(e), which is not the case in the instant application.

With regard to applicant arguments regarding particles disclosed by NOVA in all illustrative examples 106, the examiner agrees with the applicants, after carefully studying the submitted Declaration, that the pre-expanded particles having content of the organic blowing agent of less than 2 wt. % are not inherently capable of being expanded in conventional expansion equipment to the claimed bulk density not exceeding 6 pound per cubic foot without additional impregnation. The applicants successfully demonstrated that the amounts of organic blowing agent need to exceed those disclosed in the NOVA reference to achieve the claimed expansion property. However, as it is well established by the case law that the disclosure of the reference is not limited to the preferred embodiments only. As discussed above, the reference also discloses a comparative experiment, in which the pre-expanded particles containing 5.9 wt % of pentane and bulk density of 520 kg/m<sup>3</sup> are further pre-expanded without additional impregnation to the bulk density of 14.9 kg/m<sup>3</sup>. (Note that the examiner disagrees with the applicants interpretation of the comparative experiment and the applicants statement that the polystyrene particles containing 6.2% by weight pentane are expanded not to a density of 14.9 kg/m<sup>3</sup>, and these expanded particles have a pentane content of 5.9% by weight. The particles that have the density of 520 kg/m<sup>3</sup> and have 5.0 wt % pentane are expanded to have the density of 14.9. The amount of pentane remaining in fully expanded particles with 14.9 density is not disclosed, and is irrelevant to the claimed invention). Also, as discussed above, lowering the amount of

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the blowing agent in the original, and, thus, pre-expanded particles would have been obvious to achieve the desired density of the final product. The amount of blowing agent is clearly a result –effective variable, and it would have been clearly within the routine experimentation conducted by an ordinary artisan to adjust the amount of the organic blowing agent to achieve the desired expansion ratio and the final density of the fully expanded product. This position is further supported by applicants own statements on page 19 of their response that the amount of blowing agent has an effect on the density of the final product.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

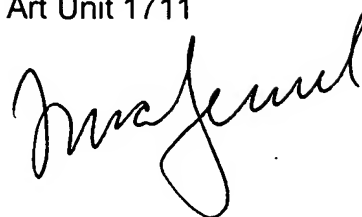
Irina S. Zemel

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A handwritten signature in black ink, appearing to read 'M. J. ...', is written over the printed name 'M. J. ...'.